

What is claimed is:

1. In a method for repairing a multicast session in a network, the steps comprising:

- 5 sending a request message from a source to a subscription server in the network, requesting a repair service for an original multicast session originated by said source;
- sending an enabling signal from said subscription server to a plurality of retransmit servers in the network, to buffer data traffic from said original multicast session, in response to said request;
- 10 buffering a copy of said data traffic at each of said plurality of retransmit servers and monitoring errors in each copy;
- automatically selecting with said plurality of retransmit servers at least one retransmit server from among said plurality, having a minimum of said errors in its respective copy; and
- 15 sending said respective copy to repair servers in the network to enable said repair server to automatically provide a transparent repaired multicast session derived from said respective copy.

2. The method of claim 1, wherein said plurality of retransmit servers
- 20 periodically transmit messages to inform the repair servers about repaired multicast sessions that are available.

3. In a method for repairing a multicast session in a network, the steps comprising:

- 25 sending a request message from a source to a subscription server in the network, requesting a repair service for an original multicast session originated by said source;
- sending an enabling signal from said subscription server to at least one retransmit server and a repair server in the network, to buffer data traffic from said original multicast session, in response to said request;
- 30 buffering a copy of said data traffic at said retransmit server;

buffering said data traffic in said repair server and monitoring received errors therein;

said repair server automatically sending a request for said copy in response to said monitoring, and

5 sending said copy to the repair server to enable said repair server to automatically provide a transparently repaired multicast session derived from said copy.

4. A network, including a source of multicast packets in a multicast session and a plurality of multicast recipients in that session, comprising:

10 a subscriber server in the network, maintaining subscription information about said source;

said subscriber server receiving a request from said source to establish a multicast session to transmit multicast packets in the network and forming a setup message;

a plurality of retransmission servers in the network receiving said setup message
15 from said subscriber server and in response, buffering portions of the packets during the multicast session;

a repair server in the network providing received ones of the packets to said recipients during the multicast session, the repair server including a missing packet detector;

20 said repair server automatically detecting missing packets and sequentially requesting missing packets from respective ones of the plurality of retransmission servers;

a billing system coupled to the subscriber server, receiving charging information from the subscriber server about said multicast session.

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5. In a method for repairing a multicast session in a network, the steps comprising:

registering a request from an IP multicast source with a subscription server to indicate that the source wants a multicast session repaired;

30 sending the request to a plurality of retransmit servers;

listening at each retransmit server to the multicast session and evaluating its quality;

periodically reporting the quality received by each of the retransmit servers, to other retransmit servers;

5 comparing at each retransmit server the quality received for a specific IP multicast session to the quality received by other retransmit servers;

determining if a retransmit server has more than "L%" packet loss or is not one of "N" retransmit servers with highest quality, and if so then stopping the retransmit server from listening to the session;

10 periodically transmitting by a retransmit server, its IP address and port number and an IP address and port number of each multicast session for which it has buffered packets;

monitoring at a repair server transmissions by retransmit servers to determine which retransmit server can help repair a specific IP multicast data stream;

15 determining at a repair server that packets are missing in an IP multicast data stream, and communicating with at least one retransmit server that can supply the missing packets; and

sending charges from the subscription server to a billing system for providing a multicast repair service in response to the source's request.

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6. The method of claim 5, wherein a plurality of retransmit servers periodically transmit unicast messages to inform the repair servers about repaired multicast sessions that are available.

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7. The method of claim 5, wherein a plurality of retransmit servers periodically transmit multicast messages to inform the repair servers about repaired multicast sessions that are available.

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